CONTENTS

Volume 25, Issues 1–6

International Journal of
MATHEMATICAL EDUCATION in SCIENCE and TECHNOLOGY

Issue No. 1, JANUARY

Approximate solution of an integro-differential equation. M. A. B. DEAKIN and D. L. S. MCELWAIN 1

The natural exponential comes before the natural logarithm. B. J. GARDNER 5

Analysis of two elementary functions. M. K. DAS 17

Real numbers in factorial representation. J. F. WEISZ 25

A notion of semantic distance between terms or expressions and its application in the case of mathematical terms used in the classroom. T. PATRONIS, D. SPANOS and A. GAGATSIS 31

On generalized cycloids. H. E. FUENTES 45

Modelling mixing problems with differential equations gives rise to interesting questions. B. J. WINKEL 55

$\sqrt{2}$ is irrational. F. J. PAPP 61

Modelling-orientated teaching (a theoretical development for teaching mathematics through the modelling process). N. KLAOUDATOS 69

A Markov chain model in mathematical skill learning. S. C. PERDIKARIS 81

A Poisson distribution model for the generation of 'mathematics concepts' in problem-resolution. P. W. GWANYAMA 87

On rank, underdetermined systems and consistency. P. GLAISTER 95

Permutation bases. R. HEMASINHA 103

On teacher education programmes in mathematics. G. HAREL 113

The game of matrix rings for cryptography. F. LIN 121

An open-book exam for non-mathematics majors. I. CNOP and F. GRANDSARD 125

Iterative solution of non-linear equations using a computer algebra package. J. W. MOONEY 131

Classroom notes 139

Issue No. 2, MARCH

On Young's inequality. D. RÜTHING 161

Some experiences in teaching functional programming. M. JOY and S. MATTHEWS 165

Assessing job/activity and time-lag effects on school performance. U. H. ETUK 173

Paradoxes in incompressible fluid dynamics. R. K. BERA 177

A generalization of triangular numbers. P. W. HAGGARD and B. L. SADLER 195

Correlational trends in performance of mathematics students—matching the Special Science Programme on the Nigerian Certificate of Education. D. O. IHEJIETO and S. I. EMENALO 203

A certain family of sub-exponential series. H. M. SRIVASTAVA 211

Some more n–dimensional geometry. M. J. KAISER 217

Pupil's conceptions about mathematics teaching in Finland and Hungary. E. PEHKONEN and K. TOMPA 229

Spreadsheets in mathematical education. T. STEWARD 239

Computer spreadsheets for numerical analysis. J. B. SOPER and M. P. LEE 245

Arrowhead curves in a tree of Pythagorean triples. A. G. SHANNON and A. F. HORADAM 255

Spreadsheets in teaching and learning topics in calculus. S. ABRAMOVICH and I. LEVIN 263

Application of Sumudu transform to partial differential equations. S. WEERAKOON 277

Interactive theorem-finding in plane geometry—an example. H. SCHUMANN 285

Trapezia, kites and inequalities. R. J. CLARK 293

Classroom notes 303

Issue No. 3, MAY

Application of Polya functions to electrical networks. A. BEHAGI 317

An intelligent CAI project for teaching mathematical concepts. A. A. KHASAWNEH 325

Convergence in Karmarkar's algorithm: a review. J. N. SINGH and D. SINGH 333

Crop circles and Euclidean geometry. T. A. RIESE and YONG-ZHUO CHEN 343

Alternative proofs of some theorems on Riemann integration. J. KLIPPERT 347

A case study on the mathematics curriculum component of the technical education programme in Nigerian technical schools. D. O. IHEJIETO ... 355

Evolving mathematics culture through effective teaching—the Nigerian experience. S. I. EMENALO 363

Problem-solving method with handout material: max–min word problems. B. UBUZ 367

Technical education mathematics curriculum in Uganda: relevance to industries. P. O. ELUK 377

Chebyshev's inequality and the law of large numbers. T. C. T. KOTIAH ... 389

A titration model—an analysis and solution. P. GLAISTER 399

A link between the matrix equation $\mathbf{AX}-\mathbf{XB}=\mathbf{C}$ and the matrix quadratic. A. J. B. WARD 407

Applications of Markov chains to teachers' decision making. S. C. PERDIKARIS 413

Probability in problem solving. S. C. PERDIKARIS and M. G. VOSKOGLOU 419

High school students' and teachers' STS outlook profiles. Are there gender differences? U. ZOLLER and D. BEN-CHAIM 423

Elasticity and its measurement. A. M. KIANIAN 431

An algorithm for the generation of near-normal variates using platonic bodies. P. GHARGHOURI 439

Visualization, anchorage, availability and natural image: polygonal numbers in computer environments. F. HITT 447

Words that count: communicating with mathematical text. D. P. NEWTON and C. H. MERRELL 457

Classroom notes 463

Issue No. 4, JULY

An application of Markov chain to the process of modelling. M. G. VOSKOGLOU 475

Using MATLAB as a programming language for numerical analysis. J. H. MATHEWS and K. D. FINK 481

Students' use of graphics calculators under examination conditions. M. A. M. BOERS and P. L. JONES 491

A new expansion for a Jacobi function of the second kind. E. CAPELAS DE OLIVEIRA 517

Generalized duality and the geometry of linear programming. M. J. PANIK 521

Errors and difficulties in understanding elementary statistical concepts. C. BATANERO, J. D. GODINO, A. VALLECILLOS, D. R. GREEN and P. HOLMES 527

The future of fractions. P. GROFF 549

Advanced calculus reform: continuity and integration. M. LYNCH 563

Partitions of positive integers. J. R. HANSON 573

Markov chains and van Hiele levels: a method of distinguishing different types of students' geometric reasoning processes. S. C. PERDIKARIS 585

Classroom notes 591

Issue No. 5, SEPTEMBER

Taylor polynomial solutions of Volterra integral equations. M. SEZER ... 625

Issues in teaching about computing the standard deviation. L. H. PRIMAVERA and B. S. GORMAN 635

Covariance inequality and its applications. J. Behboodian 643

A study of teachers' usage of vague terms in the geometry classroom. R. F. Halpin, K. E. Easterday and J. A. Elrod 649

The answer is not the solution—inequalities and proof in undergraduate mathematics. J. A. Anderson 655

An extension of Vandermonde's determinant. K. Martín and J. M. de Olazábal 665

Concerning an integral arising in the study of laser-drilling equations. S. Bedding 669

Teaching operations research in North American business schools. H. A. Eiselt and M. Eiselt 673

A simple verification method for the Goldbach conjecture. S. Y. Yan ... 681

Summing perturbation expansions—an elementary approach via the gambler's ruin problem. L. Short 689

Jamaican primary school teachers' knowledge of the mathematics they teach. P. Nissen 699

Thinking about the question we ask our students. R. Hubbard 717

The estimation of errors in numerical quadrature. G. A. Evans 727

Alternative proofs of the rational canonical form theorem. J. D. Botha ... 745

Can young children learn abstract ideas in geometry? G. Malaty 751

Classroom notes 759

Issue No. 6, November

Solution of differential equations by quadratures: the Cauchy integral method. W. A. Robin 779

Convex combinations of n analytic functions in generalized Ruscheweyh class. S. Nanjunda Rao and S. Latha 791

Stochastic analysis of a prey–predator system. G. P. Samanta 797

200 years of teaching mathematics at the Technical University of Budapest. P. Rózsa 805

Reliability and validity of the estimates of the Rasch latent trait model. P. Y. K. Kwan and A. G. Shannon 811

Mathematics teaching: the issue of quality. I. Jacques 823

Numerical study of Fredholm integral equations. J. Caldwell 831

Mathematical design of continuous, isothermal crystallizers with homogeneous nucleation: a simplified approach. F. X. Malcata 837

A unification of the Voigt functions. S. Yang 845

A proof of Turan's inequality using the Prüfer substitution. M. D. PHILLIPS 853

Pseudoroots of a real polynomial and their graphical representation. D. RIMER 861

The taming of a monster: a parametrization of the von Koch Curve. H. SAGAN 869

Complex dynamical systems. G. J. MARTIN 879

Application of item analysis in student academic support interventions: The case of special mathematics students at Unitra. S. N. IMENDA and A. S. GREWAL 899

On the approximate solutions of the anharmonic oscillator problem. K. HALDAR and B. K. DATTA 907

Classroom notes 913

Author index 921